

**IN THE CLAIMS**

The following is a complete listing of claims with a status identifier in parenthesis.

1. (Currently Amended) A method of conducting R chemical reactions, where R is a positive integer, in a system which includes an apparatus which provides energy for the chemical reactions, said system also including a parameter selecting unit having a user interface and storage means for carrying a database, said chemical reaction involving one or more chemical species  $^XB$  and resulting in a reaction product  $^XD$  which includes a functionality  $\delta$ , where the chemical reaction involves one or more functionalities  $\beta$  in the  $^XB$ 's which are transformed into  $\delta$  in  $^XD$ , each reaction being performed under the influence of one or more corresponding chemical substances  $A_R$ , such chemical substances  $A_R$  including a chemical functionality  $\alpha_R$  being involved in the transformation of the functionality/functionalities  $\beta$  to the functionality  $\delta$ , said database comprising N sets of associated data, each of the N sets comprising:

- i) a set of reaction parameters for a chemical reaction involving the transformation of one or more functionalities  $^N\beta$  of chemical species  $^NB$  into  $^N\delta$  in a product  $^ND$  under the influence of one or more chemical substances  $^NA$ , such chemical substance(s) each including a chemical functionality  $^N\alpha$  being involved in the transformation of the functionality  $^N\beta$  to the functionality  $^N\delta$ ; and
- ii) functional or structural information about the chemical species  $^NB$ ;

the method comprising that:

\* ~~the user provides~~ providing information to the user interface of the parameter selection unit about the functionality/functionalities  $\beta$  in the chemical species  $^XB$ ;

~~\* the user provides~~ providing information to the user interface of the parameter selection unit about the desired transformation of  $\beta$  to  $\delta$ ;

~~\* the parameter selection unit retrieves~~ retrieving R sets of associated data ( $\Sigma_R$ ) from the database in the parameter selection unit without user interface, such sets of associated data being selected so that the functionality/functionalities  $^N\beta$  in each set of associated data is/are essentially identical to the functionality/functionalities  $\beta$  in  $^XB$  and the functionality  $^N\delta$  is essentially identical to  $\delta$  in the product  $^XD$ , in order to obtain the R sets of reaction parameters ( $^X\Sigma_R$ ), said R sets of reaction parameters ( $^X\Sigma_R$ ) being accompanied by corresponding information about the chemical substance(s)  $A_R$  under which influence the R reactions should be conducted and information about any additional constituents involved in the chemical reaction;

~~\*preparing~~ an array of R reaction mixtures each comprising a predetermined amount of the chemical substance(s)  $A_R$  and the chemical species  $^XB$  and any additional constituents required is prepared according to the sets of reaction parameters; and

~~\* treating~~ each of the R reaction mixtures are treated in the apparatus in accordance with the corresponding set of reaction parameters.

2. (Original) A method according to claim 1, wherein the array of R reaction mixtures is provided from  $^XB$  stock solution(s) and a kit comprising stock solutions of the chemical substance(s)  $A_R$  and any additional constituents required.

3. (Original) A method according to claim 1, wherein the R sets of reaction parameters involves the use of more than one chemical substance  $A_R$ .

4. (Original) A method according to claim 1, wherein the R sets of reaction parameters involves the use of R chemical substances  $A_R$ .

5. (Original) A method according to claim 1, in which the array of R reaction mixtures is prepared by combining the chemical species  $^XB$  with the content of one or more of P containers each comprising a chemical substance  $A_R$  including a chemical functionality  $\alpha_R$  which is intended to facilitate the transformation of a functionality  $\beta$  to a functionality  $\delta$  in a chemical reaction involving a chemical species  $^XB$ .

6. (Original) A method according to claim 1, wherein the R sets of reaction parameters are provided in the form of control parameters for the apparatus.

7. (Original) A method according to claim 1, wherein treatment of the R reactions is performed substantially simultaneously.

8. (Original) A method according to claim 1, wherein treatment of the R reactions is performed sequentially.

9. (Original) A method according to claim 1, wherein the treatment includes heating.

10. (Original) A method according to claim 1, wherein the reaction is a microwave facilitated chemical reaction.

11. (Original) A method according to claim 1, wherein the apparatus comprises a microwave reaction cavity.

12. (Withdrawn) A kit for use in the method defined in claim 1, said kit comprising P containers each comprising a chemical substance  $A_R$  including a chemical functionality  $\alpha_R$  which is intended to facilitate the transformation of one or more functionalities  $\beta$  to a functionality  $\delta$  in a chemical reaction involving one or more chemical species  $^XB$ , said chemical reaction being intended to result in a reaction product  $^XD$  which includes a functionality  $\delta$ , where the chemical reaction involves one or more functionalities  $\beta$  in the  $^XB$ 's which are transformed into  $\delta$  in  $^XD$ .

13. (Withdrawn) A kit according to claim 12, which further comprises additional constituents required for the transformation.

14.-16. (Canceled)

17. (Withdrawn) A kit comprising P containers each comprising a chemical substance  $A_R$  including a chemical functionality  $\alpha_R$  which is intended to facilitate the transformation of one or more functionalities  $\beta$  to a functionality  $\delta$  in a chemical reaction involving one or more chemical species  $^XB$ , said chemical reaction being intended to result in a reaction product  $^XD$  which includes a functionality  $\delta$ , where the chemical reaction involves one or more functionalities  $\beta$  in the  $^XB$ 's which are transformed into  $\delta$  in  $^XD$ , said kit usable to conduct R chemical reactions, where R is a positive integer, in a system which includes an apparatus which provides energy for

the chemical reactions, said system also including a parameter selecting unit having a user interface and storage means for carrying a database, said chemical reaction involving one or more chemical species  $^XB$  and resulting in a reaction product  $^XD$  which includes a functionality  $\delta$ , where the chemical reaction involves one or more functionalities  $\beta$  in the  $^XB$ 's which are transformed into  $\delta$  in  $^XD$ , each reaction being performed under the influence of one or more corresponding chemical substances  $A_R$ , such chemical substances  $A_R$  including a chemical functionality  $\alpha_R$  being involved in the transformation of the functionality/functionalities  $\beta$  to the functionality  $\delta$ , said database comprising N sets of associated data, each of the N sets comprising

i) a set of reaction parameters for a chemical reaction involving the transformation of one or more functionalities  $^N\beta$  of chemical species  $^NB$  into  $^N\delta$  in a product  $^ND$  under the influence of one or more chemical substances  $^NA$ , such chemical substance(s) each including a chemical functionality  $^N\alpha$  being involved in the transformation of the functionality  $^N\beta$  to the functionality  $^N\delta$ ; and

ii) functional or structural information about the chemical species  $^NB$ ;

the method comprising that

\* the user provides information to the user interface of the parameter selection unit about the functionality/functionalities  $\beta$  in the chemical species  $^XB$ ;

\* the user provides information to the user interface of the parameter selection unit about the desired transformation of  $\beta$  to  $\delta$ ;

\* the parameter selection unit retrieves R sets of associated data ( $\Sigma_R$ ) from the database, such sets of associated data being selected so that the functionality/functionalities  $^N\beta$  in each set of associated data is/are essentially identical to the functionality/functionalities  $\beta$  in  $^XB$  and the

functionality  ${}^N\delta$  is essentially identical to  $\delta$  in the product  ${}^X D$ , in order to obtain the R sets of reaction parameters ( ${}^X\Sigma_R$ ), said R sets of reaction parameters ( ${}^X\Sigma_R$ ) being accompanied by corresponding information about the chemical substance(s)  $A_R$  under which influence the R reactions should be conducted and information about any additional constituents involved in the chemical reaction;

- \* an array of R reaction mixtures each comprising a predetermined amount of the chemical substance(s)  $A_R$  and the chemical species  ${}^X B$  and any additional constituents required is prepared according to the sets of reaction parameters;

- \* each of the R reaction mixtures are treated in the apparatus in accordance with the corresponding set of reaction parameters.

18. (Withdrawn) A kit according to claim 17, which further comprises additional constituents required for the transformation.

19. (Withdrawn) A computer readable data carrier loaded with a computer program system, said computer program system

- \* retrieving information via the user interface of the parameter selection unit about the functionality/functionalities  $\beta$  in the chemical species  ${}^X B$ ;

- \* retrieving information via the user interface of the parameter selection unit about the desired transformation of  $\beta$  to  $\delta$ ;

- \* retrieving, via the parameter selection unit, R sets of associated data ( $\Sigma_R$ ) from the database, such sets of associated data being selected so that the functionality/functionalities  ${}^N\beta$  in each set

of associated data is/are essentially identical to the functionality/functionality  $\beta$  in  $^XB$  and the functionality  $^N\delta$  is essentially identical to  $\delta$  in the product  $^XD$ , in order to obtain the R sets of reaction parameters ( $^X\Sigma_R$ ), said R sets of reaction parameters ( $^X\Sigma_R$ ) being accompanied by corresponding information about the chemical substance(s)  $A_R$  under which influence the R reactions should be conducted and information about any additional constituents involved in the chemical reaction;

- \* providing instructions to the liquid handler about the preparation of an array of R reaction mixtures each comprising a predetermined amount of the chemical substance(s)  $A_R$  and the chemical species  $^XB$  and any additional constituents required according to the sets of reaction parameters;

- \* providing instructions to the reaction cavity about treatment of each of the R reaction mixtures in the apparatus in accordance with the corresponding set of reaction parameters in order to conduct R chemical reactions, where R is a positive integer, in a system which includes an apparatus which provides energy for the chemical reactions, said system also including a parameter selecting unit having a user interface and storage means for carrying a database, said chemical reaction involving one or more chemical species  $^XB$  and resulting in a reaction product  $^XD$  which includes a functionality  $\delta$ , where the chemical reaction involves one or more functionalities  $\beta$  in the  $^XB$ 's which are transformed into  $\delta$  in  $^XD$ , each reaction being performed under the influence of one or more corresponding chemical substances  $A_R$ , such chemical substances  $A_R$  including a chemical functionality  $\alpha_R$  being involved in the transformation of the functionality/functionality  $\beta$  to the functionality  $\delta$ , said database comprising N sets of associated data, each of the N sets comprising

- i) a set of reaction parameters for a chemical reaction involving the transformation of one or more functionalities  ${}^N\beta$  of chemical species  ${}^NB$  into  ${}^N\delta$  in a product  ${}^ND$  under the influence of one or more chemical substances  ${}^NA$ , such chemical substance(s) each including a chemical functionality  ${}^N\alpha$  being involved in the transformation of the functionality  ${}^N\beta$  to the functionality  ${}^N\delta$ ; and
- ii) functional or structural information about the chemical species  ${}^NB$ ;

the method comprising that

- \* the user provides information to the user interface of the parameter selection unit about the functionality/functionalities  $\beta$  in the chemical species  ${}^XB$ ;
- \* the user provides information to the user interface of the parameter selection unit about the desired transformation of  $\beta$  to  $\delta$ ;
- \* the parameter selection unit retrieves R sets of associated data ( $\Sigma_R$ ) from the database, such sets of associated data being selected so that the functionality/functionalities  ${}^N\beta$  in each set of associated data is/are essentially identical to the functionality/functionalities  $\beta$  in  ${}^XB$  and the functionality  ${}^N\delta$  is essentially identical to  $\delta$  in the product  ${}^XD$ , in order to obtain the R sets of reaction parameters ( ${}^X\Sigma_R$ ), said R sets of reaction parameters ( ${}^X\Sigma_R$ ) being accompanied by corresponding information about the chemical substance(s)  $A_R$  under which influence the R reactions should be conducted and information about any additional constituents involved in the chemical reaction;
- \* an array of R reaction mixtures each comprising a predetermined amount of the chemical substance(s)  $A_R$  and the chemical species  ${}^XB$  and any additional constituents required is prepared according to the sets of reaction parameters;



\* each of the R reaction mixtures are treated in the apparatus in accordance with the corresponding set of reaction parameters.